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Visit our website at:
<http://www.jdip.org>

JDIP News is published periodically to enhance intramural communications and ensure that JDIP participants and stakeholders are updated on news of relevance to our community.

Please direct any contributions, suggestions and comments via email to: Vivek Kapur at vkapur@psu.edu



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New Contact Information

Steen Erikson has accepted a position at the UofM's School of Nursing and will be leaving JDIP as of October 1, 2007.

For all Phase I (years 1 through 3) JDIP contracts, please change your contact information to Colleen O'Neill at the Department of Microbiology, University of Minnesota. All invoices on Phase I contracts should be sent directly to Colleen for processing. Her contact details are:

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For all matters pertaining to the ongoing RFA and Phase II at Penn State, please contact Cathy Shreckengast via e-mail at cas75@psu.edu or by phone at 814-863-5786.

**Contact Colleen for existing Phase I contracts ONLY!
Phase II is managed by the Pennsylvania State University!**

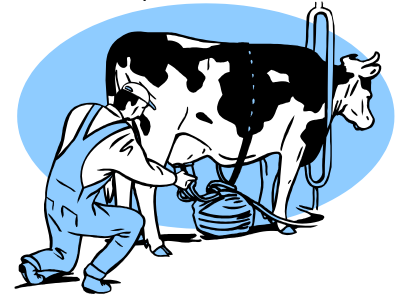
JDIP Year 3 Funding Status

Most of the Year 3 contracts are finally in place, with the last few in the pipeline. We can't thank you enough for your patience during this long, arduous process. If you have any questions about your contract, please don't hesitate to contact us. We will work hard to adhere to our timeline for the Phase II funding so that contracts can be in place by the beginning of the 4th contract year, beginning April 15, 2008.

JDIP White Paper Project

Submitted by Ian Gardner

To date, no causal link has been scientifically established between *Mycobacterium avium* subspecies paratuberculosis (MAP) and Crohn's disease in humans. But, what would be the ramifications for the dairy industry if such a causal link were established? How extensive and prolonged might there be reduced demand for dairy products and what could be done to reduce such potential effects? To address these questions, the JDIP Executive Committee, with funds from USDA-APHIS, commissioned Huybert Groenendaal and Francisco Zagmutt from Vose Consulting to evaluate possible impacts to the dairy industry with a goal of providing a framework for discussion among stakeholder groups.

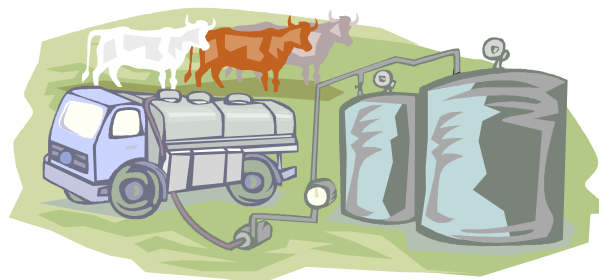


"Three scenarios were developed based on the effectiveness of possible risk mitigation strategies and the likely response of regulatory officials and consumers", said Groenendaal. "Because the study was based on hypothetical scenarios, we choose historic disease and consumer risk perception events where supply and demand effects on the industry were well documented". "In the first scenario (similarity to Foot-and-Mouth disease from a consumer risk perspective), we assumed that an effective strategy, i.e. pasteurization, existed and therefore, the demand decrease in consumption of dairy products was negligible. In the second scenario (similarity to *Salmonella* spp. and *E.coli* O157), we assumed that additional or modified risk mitigation measures (e.g. changes in the time and temperature used in pasteurization protocols) would be needed to minimize the health hazard for humans consuming processed dairy products. In this case, we expect a small milk demand decrease. The third scenario (similarity to Creutzfeldt Jacob disease) assumed that no fully-effective risk mitigation was readily available and this resulted in a considerable demand decrease and a potential reduction in milk supply as a result of government regulations".

"With a milk demand decrease of 1% or 5%, we estimated a reduction in consumer surplus of \$600 million and \$2.9 billion and a reduction in dairy farm income of \$270 million and \$1.3 billion", said Zagmutt who jointly participated in development of the economic model. He acknowledged that the true shift in consumer demand was impossible to predict even when knowledge of historic consumer responses to non-food safety issues such as the use of recombinant bovine somatotrophin was considered. "Given the current scientific knowledge about MAP and Crohn's disease and the effectiveness of risk mitigation methods, we speculate that the first or second scenario would be most likely to occur if a link were established", he said. "Consumer response and economic consequences to discovery of such a link are therefore expected to be limited, but could be large if the consumer's perception of risk is large or if risk mitigation strategies were not to be fully effective".

Both authors pointed out that since the numerical results are based solely on past experiences with other consumer food safety concerns, the main value of the study resides in the discussion about the potential scenarios that could develop, should a link between MAP and Crohn's disease be found.

The study did not consider the effects of consumption of unpasteurized milk which is well accepted to increase the risk of human infection with milk-borne pathogens such as *Salmonella* spp and *Escherichia coli* O157 or consider culled dairy beef as a possible source of MAP for humans. A manuscript from the work has been submitted to the *Journal of Dairy Science*.



JDIP Phase II RFA Update

Twenty-seven proposals were received in response to the JDIP Phase II, year 4 RFA. The proposals totalled \$3.2 million, and we have about \$1.2 million available for year 4 (including the \$500,000 for the multi-year vaccine development projects).

We are currently circulating the proposals to external reviewers.

SET YOUR CALENDAR

**EVENT:
THE JDIP 4TH
ANNUAL
CONFERENCE**

**DATE:
APRIL 18-20TH
2008**

U.S. Animal Health Association Meeting

Scott Wells & Ken Olson

NJWG and Johne's Committee to Meet at USAHA

The upcoming U.S. Animal Health Association's annual meeting, that will be held at John Ascuaga's Nugget Casino Resort in Reno, NV, will have a full complement of Johne's meetings. The National Johne's Working Group (NJWG) will meet for a half day (begin at 1:00 pm) on Thursday, October 18 and all day Friday, October 19, 2007. The USAHA Johne's Disease Committee will meet on Sunday October 21 starting at 12:30 P.M.

The leadership of the USAHA Johne's Disease committee, Scott Wells, Chair and Andy Schwartz, Co-chair and the Co-Chairs of the National Johne's Working Group, Jamie Jonker representing NMPF and Elizabeth Parker, representing NCBA, and Bob Whitlock representing academia and Ken Olson, Treasurer NJWG have developed the following general outline and topics for the meetings:

NJWG Meeting

National Johne's Coordinator's report
Dairy NAHMS 2007 report on the JD component
Demonstration Herd reports, nationally and by reports by several states
Report from JDIP and the external support for JD vaccination studies
Report on National Dairy Producer Survey program
Proposal to update Johne's Disease Strategic Plan
Johne's Round-up, a new proposal to support JD program
Johne's Milk ELISA update
Changes in leadership of NJWG
Proposed changes to herd classification program standards
National Educational Initiative update

Johne's Disease Committee meeting

Status of 2006 Recommendations and Resolutions, development proposals and other Business
Overview of the NJWG meeting and actions
Report on the NAHMS Dairy JD Study – Jason Lombard
Demonstration Herds Report - Chuck Fossler
Finance and Budget Report - status of Funding, options
Reports on Approved Laboratories
Scientific Advisory Committee Report

Agenda updates will be available on the Johne's Education site:
www.johnesdisease.org

On-line registration and other information about the USAHA meeting is available at
<http://www.usaha.org/meetings/2007/>

News from the Executive Committee

A number of notable developments are being discussed in the weekly Executive Committee meetings:

- The JDIP Logic Model, a new requirement for the Phase II renewal, has been reviewed and accepted by the USDA. The Logic Model will be available on the JDIP web site to registered members. Some of you may already know that the USDA will be using Logic Models more widely to measure progress in sponsored research efforts.
- Vivek Kapur has accepted a position at Penn State University as Department Head at the Department of Veterinary and Biomedical Sciences. The Phase II JDIP grant will be transferred to Penn State, and all Phase II contracts will be subcontracts issued from Penn State. Phase I (years 1-3) contracts will continue to be administered from the University of Minnesota, and will remain at Minnesota through completion of the contract obligations.

Executive Committee

John Bannantine,
USDA/NADC

Ian Gardner, University
of California, Davis

Yrjo Grohn, Cornell
University

Peter Johnson,
USDA/CSREES

Vivek Kapur (PI),
University of Minnesota

Scott Wells, University
of Minnesota

Johne's in the Producer Press

Date	Page	Magazine	Title
7/10/07	481	Hoard's	Our Johne's control tools do work
7/13/07	182	Angus Journal	Score One for the Team
7/30/07		Dairy Herd Management	Study explores the effect of colostrum replacers on Johne's risk

Johne's News and Notes:

3/1/07		Drovers	Have you taken advantage of ultrasound? (brief mention - ultrasound for Johne's testing)
7/31/07		Drovers	Diagnosing twins and fetal sexing (brief mention - ultrasound for Johne's testing)
8/25/07	564	Hoard's	Farm Flashes... Common diseases affect milk production, milkfat, protein

Detecting “Super-shedder” cows effectively and economically in a large dairy

“Super-shedder” cows, those shedding huge numbers of *Mycobacterium avium* subsp. *paratuberculosis* (Map) in feces, likely play an important role in contributing to the environmental load of Map bacteria on dairies, making it difficult for recommended management practices to effectively prevent fecal-oral exposure of heifers and cows.

Bob Whitlock from the Johne’s Research Laboratory (JRL), New Bolton Center, University of Pennsylvania, was the first to recognize “super-shedders.” “To put these “super-shedder” cows in perspective in terms of their contribution to the environmental load of Map, I have estimated that one “super-shedder” excretes up to 10 billion Map per day. This is equivalent to the environment load produced by more than 2,000 moderate or 20,000 low-shedders”, said Whitlock.

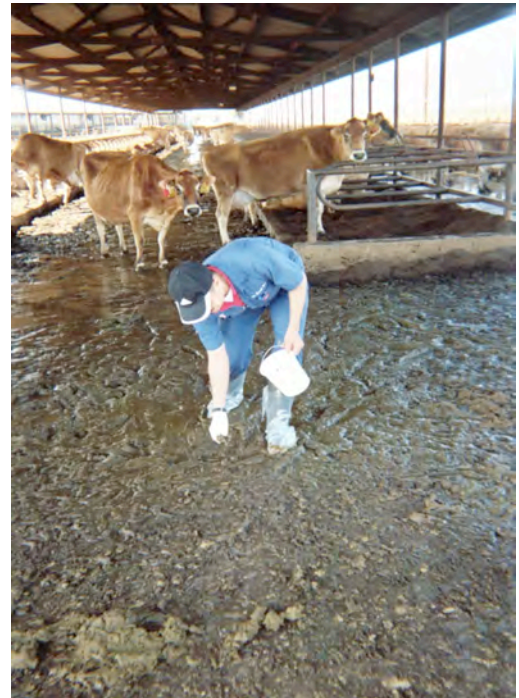
http://www.paratuberculosis.org/pubs/proc8/abst2_p44.htm

Whitlock’s work indicates that such cows might be important contributors to the so-called “pass-through” phenomenon, where non-infected herd mates have positive fecal culture results (especially low numbers of cfu/tube) for several days after they have consumed feces or food and water contaminated with feces from Map-shedding cattle.

“Over the years, I have changed my opinion about where Map diagnostics should be directed for purposes of on-farm control of Map transmission,” says Whitlock. “I originally thought low-shedders should be detected and culled early on; but now I am even more convinced that failing to find all the super-shedders, most of which are subclinical and cannot be readily identified by dairymen, is a much more costly error,” he said.

“Although detection of super-shedders might be straightforward on small dairies, it is a challenge in large dairies where cows are aggregated in production strings and moved every 1 to 2 weeks. Keeping track of cow movements among strings and preventing widespread exposure can be challenging, to say the least”, said Ian Gardner, project director for a grant awarded in September, 2007 by USDA-NRI-CSREES to study the epidemiology and detection of super-shedders.

“Our preliminary results indicate that collection of string-specific environmental slurry samples (from 150-250 cows in a free-stall dairy), real-time PCR assays, followed by individual animal testing in positive strings may be a cost-effective and feasible way to detect super-shedder cows in a time frame to facilitate on-farm decisions,” said Gardner.



Sharif Aly, a PhD student at Davis, collecting environmental slurry samples into a plastic bucket in preparation for diagnostic testing to screen a production string for *Map* super-shedders. The Jersey cows in the string look curious!

Whitlock and Gardner agree that culture of individual fecal samples of all cows on a solid medium such as Herrold's egg yolk remains the current "gold standard" for detection, but such an approach cannot provide results in a practical time frame for most herds.

One of the goals of the current USDA project is to streamline the diagnostic process. "This has particular relevance in California where the median herd size is about 900 cows," said Gardner. "Assuming a prevalence of 1% in a herd, a 900-cow dairy would be expected to have 10 times the number of "super-shedders" than a 90-cow dairy, which is more typical of herds in the Midwest".

"Missing 1 or 2 super-shedders out of every 10 might be catastrophic. Our goal is to find them all, but detecting 90 to 95% with a single testing strategy is probably much more realistic given the imperfections of current diagnostic tests," said Gardner.

"We expect to test our research herd of over 3,000 cows in early October 2007. Initial results should be available by mid-November for development of follow-up testing strategies. Our preliminary plan is to continue to collect serum, whole blood, feces and milk samples from super-shedders while they remain in the herd to evaluate how their diagnostic profiles change. Logistical details about repeated sampling of cows will need to be worked out with the herd owner after we sit down and discuss the results and their implications for disease control," said Gardner.



Randy Anderson, a veterinarian from the California Department of Food and Agriculture, transfers a 40 ml sample of fecal slurry from the bucket into a plastic tube for shipping to the Johne's Research Laboratory for culture and PCR testing.

Pennsylvania, and Ernest Hovingh at Pennsylvania State University. Key collaborators are Ynte Schukken, JDIP Epidemiology project leader, and Randy Anderson, a Veterinary Medical Officer with the California Department of Food and Agriculture. Anderson and Sharif Aly, a PhD student in epidemiology at UC Davis School of Veterinary Medicine, will head the on-farm sample collection.

JDIP investigators interested in obtaining samples from super-shedder cows should contact: Ian Gardner <iagardner@ucdavis.edu> or Bob Whitlock <rhwh@vet.upenn.edu>.



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Project 4: MAP Immunology and Vaccine Development

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Upcoming Meetings and Conferences

- World Dairy Expo
Alliant Energy Center of Dane County, Madison, WI
October 2-6, 2007
<http://www.world-dairy-expo.com/gen.home.cfm>
- USAHA/AAVLD 111th annual meeting
John Ascuaga's Nugget Casino Resort in Reno, Nevada
October 18 - 24, 2007
<http://www.usaha.org/meetings/>
- 9th Annual ICP Meeting, International Association for Paratuberculosis
Tsukuba International Congress Center, Tsukuba, Japan
Monday October 29 - Friday November 2, 2007
<http://wwwsoc.nii.ac.jp/jsp3/9ICP>
- NMPF/NDB/UDIA Annual Meeting
Lake Buena Vista, FL
November 12-14, 2007
<http://www.nmpf.org>
- JDIP 4th Annual Conference (**Tentative - watch www.jdip.org for details**)
Michigan State University, James B. Henry Conference Center
Friday, April 18 – Sunday, April 20, 2008
<http://www.msuhenrycenter.org>

JD ON THE WEB

Johne's Disease-related Websites

Organization	URL
American Association of Bovine Practitioners	http://www.aabp.org
American Dairy Science Association	http://www.adsa.org
American Society for Microbiology	http://asm.org/
American Veterinary Medical Association	http://avma.org
Conference of Research Workers in Animal Diseases	http://www.cvmbs.colostate.edu/microbiology/crwad/index.htm
Infectious Diseases Society of America	http://www.idsociety.org
International Association for Paratuberculosis	http://paratuberculosis.org/
JDIP: Johne's Disease Integrated Program	http://www.jdip.org
JDIP Sample Shop	http://seeker.doit.wisc.edu/jdip/Default.aspx
National Agricultural Library	http://www.nal.usda.gov/awic/pubs/johnes/johnes.htm
National Johne's Education Initiative	http://johnesdisease.org/
National Veterinary Services Laboratory	Laboratory Certification Site: http://www.aphis.usda.gov/vs/nvsl/labcertification.html
NYSCHAP – New York State Cattle Health Assurance Program	http://www.nyschap.vet.cornell.edu/module/johnes/johnes.asp
United States Animal Health Association	http://www.usaha.org
University of Wisconsin Johne's Information Center	http://www.johnes.org
University of Wisconsin Johne's Disease Veterinary Certificate Programs	http://vetmedce.vetmed.wisc.edu/jdvcp/
USDA Johne's disease website	http://www.aphis.usda.gov/vs/naahps/johnes/
USDA-APHIS-VS–National Center for Animal Health Surveillance	http://www.aphis.usda.gov/vs/ceah/ncahs/index.htm

JD IN PRINT

Johne's Disease-related Publications – June - August, 2007

- Altic LC, Rowe MT, Grant IR. UV light inactivation of *Mycobacterium avium* subsp. *paratuberculosis* in milk as assessed by FASTPlaqueTB phage assay and culture. *Appl Environ Microbiol.* 2007 Jun;73(11):3728-33. Epub 2007 Apr 13. PMID: 17435001
- Beaudeau F, Belliard M, Joly A, Seegers H. Reduction in milk yield associated with *Mycobacterium avium* subspecies *paratuberculosis* (Map) infection in dairy cows. *Vet Res.* 2007 Jul-Aug;38(4):625-34. Epub 2007 Jun 13. PMID: 17565909
- Berger S, Bannantine JP, Griffin JF. Autoreactive antibodies are present in sheep with Johne's disease and cross-react with *Mycobacterium avium* subsp. *paratuberculosis* antigens. *Microbes Infect.* 2007 Jul;9(8):963-70. Epub 2007 Apr 7. PMID: 17544799
- Castellanos E, Aranaz A, Romero B, de Juan L, Alvarez J, Bezos J, Rodriguez S, Stevenson K, Mateos A, Dominguez L. Polymorphisms in *gyrA* and *gyrB* genes among *Mycobacterium avium* subspecies *paratuberculosis* Types I, II and III. *J Clin Microbiol.* 2007 Aug 1; [Epub ahead of print] PMID: 17670925
- Danelishvili L, Wu M, Stang B, Harriff M, Cirillo S, Cirillo J, Bildfell R, Arbogast B, Bermudez LE. Identification of *Mycobacterium avium* pathogenicity island important for macrophage and amoeba infection. *Proc Natl Acad Sci U S A.* 2007 Jun 26;104(26):11038-43. Epub 2007 Jun 19. PMID: 17578930
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- Donaghy JA, Linton M, Patterson MF, Rowe MT. Effect of high pressure and pasteurization on *Mycobacterium avium* ssp. *paratuberculosis* in milk. *Let Appl Microbiol.* 2007 Aug;45(2):154-9. PMID: 17651211
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- Gonda MG, Kirkpatrick BW, Shook GE, Collins MT. Identification of a QTL on BTA20 affecting susceptibility to *Mycobacterium avium* ssp. *paratuberculosis* infection in US Holsteins. *Anim Genet.* 2007 Aug;38(4):389-96. Epub 2007 Jul 6. PMID: 17617211
- Greenstein RJ, Su L, Shahidi A, Brown ST. On the action of 5-amino-salicylic acid and sulfapyridine on *M. avium* including subspecies *paratuberculosis*. *PLoS ONE.* 2007 Jun 13;2:e516. PMID: 17565369
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- Qin X. What is human inflammatory bowel disease (IBD) more like: Johne's disease in cattle or IBD in dogs and cats? *Inflamm Bowel Dis.* 2007 Aug 6; [Epub ahead of print] No abstract available. PMID: 17680652
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